MULTIPLE ACCESS FREQUENCY HOPPING NETWORK WITH INTERFERENCE ANTICIPATION

Sub A17

ABSTRACT OF THE DISCLOSURE

Spread spectrum packet-switching radio devices are operated in two or more ad-hoc networks or pico-networks that share frequency-hopping channels and time slots that may collide. The piconets can be short range wireless associations of communicating devices, for example according to the Bluetooth, Home RF or similar industry protocols. One device in each piconet is a synchronizing master and others are slaves that follow the master's frequency hopping sequence. The sequences of two or more operating piconets (masters) occasionally coincide, which could cause simultaneous transmissions that interfere or collide. The frequency hopping sequences of two or more masters are exchanged using identity codes, permitting the devices to anticipate collision time slots. Priorities are assigned to the simultaneously operating piconets during collision slots, e.g., as a function of their message queue size or latency, or other factors. Lower priority devices may abstain from transmitting during predicted collision slots, and/or a higher priority device may employ enhanced transmission resources during those slots, such as higher error correction levels, or various combinations of abstinence and error correction may be applied. Collisions are avoided or the higher priority piconet is made likely to prevail in a collision. Priorities are repetitively re-determined and re-assigned, to allocate communications resources among all the devices and piconets.